

Aus der Chirurgischen Universitätsklinik Basel
(Vorsteher: Prof. Dr. R. Nissen)
Arbeit unter Leitung von P.-D. Dr. H. Fahrländer

ACUTE REGIONAL ENTERITIS AN EVALUATION AND A DIFFERENTIAL DIAGNOSIS

INAUGURAL-DISSERTATION

zur Erlangung der Doktorwürde der gesamten Heilkunde
der medizinischen Fakultät der Universität Basel

vorgelegt von

STEVEN K. ALEXANDER

von New York, U.S.A.



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I. WHAT IS REGIONAL ENTERITIS

The disease known as «Regional Enteritis» or «Crohn's Disease» and, less fortunately, as «Regional Ileitis» or «Terminal Ileitis» has been under wide discussion in both the American and European literature for many years. Although the disease was described as early as 1769 (Morgagni) and in London in 1813, the original paper concerning Regional Enteritis was published by Crohn in 1932 entitled «Regional Ileitis». Since that time, many authors, notably Van Patter, have been evaluating and up-dating that what is known about the disease.

Van Patter defines and describes Regional Enteritis in the following manner: «Regional Enteritis affects mainly young adults and is characterized clinically by abdominal cramps, diarrhea, fever, loss of weight, anemia, and perianal abscesses and fistulas. Its lesions are usually limited, both in initial and recurrent cases, to the terminal portion of the small bowel (but) may be found anywhere in the small intestine either in localized or diffuse form. The lesions also may involve the colon for variable distances. The lesions are characterized by a granulomatous, necrotizing, ulcerating and cicatrizing process frequently accompanied by fistulas arising from the lesion of the small bowel and extending either to neighboring viscera or to the abdominal wall.»¹

The histology shows, primarily, lymphatic obstruction and edema together with structures resembling non-caseating tubercles found mainly within the submucosa. Eventually, the mucosa, the muscularis propria, the serosa, the mesentery, the lymph nodes, and even the blood vessels show similar histological changes. Secondly, a non-specific inflammatory tissue response is superimposed.

A still unknown agent is responsible for the granulomatous findings within the submucosa and other intestinal layers which accounts for the host of theories employed to discern the etiology. Protoza, bacteria, viruses, sarcoidosis, trauma, familial predisposition, and an auto-immune mechanism have all, at one time or another, been implicated as the causative factor responsible for Regional Enteritis. The majority of the literature today favors two distinct yet possibly related etiological factors: a virus and/or an auto-immune response. Both theories are yet to be proven.

This disease is distributed throughout the world, occurs in all races and is especially common in young adults between the ages of fifteen and thirty-five. It is found slightly more often in males and considerably more often in Jews. In contrast to ulcerative colitis, an overriding relationship between the disease and a personality disorder has not been demonstrated.

Regional enteritis is found most often, though by no means exclusively, in the distal ileum near the ileocecal area. The diseased portion of the bowel is generally demarcated from the healthy intestine giving rise to «skip» lesions (intact mucosa) on roentgenography. As the submucosa and deeper layers hypertrophy and swell, the well-known «string sign» can be located on x-ray. Other findings to be seen on x-ray which help establish the diagnosis are mucosal ulceration, bowel wall stiffening, and luminal narrowing. Fistulas which may form between loops of intestine create a matting-together of the bowel. This «mat» may, at times, be palpated through a slim abdominal wall often in the right lower quadrant.

Symptomatology is varied and manifold. Subfebrile to febrile temperature, long-standing diarrhea, abdominal discomfort and pain often after eating, melena, anemia, anorexia and loss of weight are most commonly reported. An acute flare-up of the underlying disease can simulate acute appendicitis as well as mimic a host of other diseases ranging from diverticulitis to periarteritis nodosa to Schönlein-Hennoch purpura to necrotizing enteritis and tumor. Whether or not Regional Enteritis may originate as an acute process or whether an acute flare-up always occurs on the basis of a chronically diseased bowel shall be discussed later.

It is not possible to accurately determine the prognosis of the disease because of the varied course that Regional Enteritis takes from patient to patient and because a large number of patients are treated surgically. Exacerbation of Regional Enteritis in patients who have been treated surgically occurs in about one-half the cases.

II. WHAT IS KNOWN ABOUT «ACUTE» REGIONAL ENTERITIS?

In his original paper, Crohn said that the vast majority of Regional Enteritis cases came under observation as ones of great chronicity. «The acute case, simulating acute appendicitis (except for the presence of diarrhea as a symptom) resolves in 66 per cent of the cases without further evidence of recrudescence. The remainder of the acute cases subside spontaneously, usually in spite of the laparotomy and customary appendectomy, and lapse into the lowgrade, typical chronic course of the disease.»² However, at that time, it was presumed that the acute phase was merely the early stage of the disease soon to lapse into the more common chronic form of Regional Enteritis.

In Crohn's second revised edition «Regional Ileitis» (1958), two authors, Warren and Sommers, are mentioned in citing that acute ileitis is found predominantly among children and even here at least half of their cases were regarded as acute exacerbations of a previously existing chronic illness. The clinical manifestations of «acute» ileitis varied hardly at all from the chronic form. A colicky pain found often in the lower abdomen accompanied by fever and diarrhea were mentioned most frequently. Roentgenology failed, however, to depict the characteristic «string sign» associated with the chronic form. It must be pointed out that Crohn described other «unusual manifestations» associated with acute Regional Enteritis such as purpura hemorrhagica, erythema nodosum and arthralgias³ which suggests that what he described

as 'acute' Regional Enteritis may actually have been a manifestation of an altogether other disease entity. Crohn himself appears somewhat wary of using the term acute ileitis when he says, "Out of this low-grade, generally unrecognized and unacknowledged course will occur an acute severe episode; this exacerbation will again subside and the future course will be identical again with that of chronic regional ileitis."⁴

Van Patter is of the opinion that "the customary classification of acute, subacute and chronic (Regional Enteritis) conveys little information about the primary pathological process... there is nothing in the primary pathological process that could be used as a basis for clinical classification."⁵ He distinguishes between a primary and a secondary pathological process of Regional Enteritis.

In the primary process the lymphatics become dilated due to lymphatic blockage. Why this occurs can only be surmised. Either a lymphoid hyperplasia or a focal area of lympho-endothelial proliferation underlies the basic pathology according to two theories. There appears also a proliferation of histiocytes within all intestinal layers probably stemming from the proliferation of endothelial foci in the lymphatics. Tubercle-like structures have likewise been described. "They seem to be products of germinal centers of lymphoid follicles or they are foci of lymphatic endothelial proliferation which fill the entire lymphatic channel,"⁶ is one theory of their origin. Van Patter believes that the "tubercles" may arise from mononuclear phagocytes of the blood and connective tissue and hence may develop apart from any lymph channel or lymphoid structure. He also believes that the diffuse cellular infiltration with plasma cells and lymphocytes occurs in response to a secondary inflammation.

The secondary process, as described by Van Patter, is an inflammatory one. After the interstitium has become edematous, venous obstruction is furthered. The resistance of the intestinal mucosa is decreased whereupon bacteria, mainly coliform, increase in numbers. This leads to ulceration. In other words, the primary process of Regional Enteritis causes partial obstruction of the bowel which gives rise to an increase in the number of bacteria present in the mucosa. The combination of a numerical increase

in bacteria, of lymphatic obstruction and edema leads to an ulceration of the mucosa. And once ulceration develops, an inflammatory process is added which soon overshadows the primary process.

Judging from the work of Van Patter, it can be argued, that, while the terms «acute» and «chronic» may be of value in describing clinical symptomatology, the term «acute» Regional Enteritis is probably incorrect in describing the disease from the standpoint of the pathology of the disease. It has yet to be shown, either by biopsy or by animal experiment, that Regional Enteritis can arise from one day to the next or from one week to the next. Regional Enteritis is a chronic, long-standing illness which may, in its course, develop acute exacerbations.

III. A DIFFERENTIAL DIAGNOSIS OF SMALL BOWEL ENTERITIS

It is important not to overlook the fact that other intestinal diseases may show a similar gross morphology to Regional Enteritis, that is to say, localized inflammations of the small bowel, and yet fit under a completely different disease entity. These diseases, which are now to be discussed in the form of ten cases taken from the files of the Surgical University Clinic, Basel, are all forms of small bowel inflammation seen pathologically. Moreover, many of these cases presented with a similar symptomatology to Regional Enteritis and were taken to be that illness under the operation until the diagnosis was refuted later by pathology. Also, it is noteworthy to mention that the majority of the following cases presented as *acute* medical emergencies and, although Regional Enteritis came under strong suspicion in the differential diagnosis in many instances, this diagnosis was never substantiated in this series of patients who had been completely asymptomatic until stricken with acute illness.

Case 1: E. S., born 1899, female, was in good health until 1959 when she suddenly experienced extreme nausea but no emesis after completion of a large meal. A persistent pain in the upper abdomen which radiated through into the back and shoulders made her summon her physician whereupon she was hospitalized. The pain then shifted into the left lower quadrant and became colicky in nature. The patient demonstrated signs of an adynamic ileus and, as her physical condition began to deteriorate, she underwent laparotomy. At that time, her leucocytic count rose as high as 58,000 without a shift to the left which was attributed to a peritoneal reaction. Gross pathology showed an ulcerating-hemorrhaging ileitis about 25 cm. in length in the jejunum, and the diseased part of the bowel was resected.

Microscopic examination revealed a fulminating suppuration of the subserosa and muscularis mucosa with especially widespread involvement of the vessels and mesenteries. Vascular thrombosis was prevalent. The diseased part of the jejunum showed definite demarcation from the rest of the bowel. The patient died twelve days post-operatively. Final diagnosis given was periarteritis nodosa.

Discussion: Periarteritis nodosa is included under the general heading — Collagen Diseases and Diseases of Unknown Etiology. The disease is a non-infective, necrotizing inflammation of the small arteries and of connective tissue. According to *Wold*, about threequarters of those afflicted will show gastro-intestinal symptoms such as abdominal pain, loss of weight, anorexia, vomiting and melena. A typical lesion in the gastro-intestinal tract is the infarct resulting from an interference with the blood supply to the involved organ. The liver, jejunum, ileum, peritoneum, colon, mesentery, stomach, cecum and duodenum are most frequently involved roughly in the descending order mentioned. Abdominal pain as a symptom of Periarteritis nodosa is present in roughly seventy per cent of the cases. The pain is usually caused by parenchymal lesions secondary to the vascular lesions. Although the pathology differs greatly, the gross clinical symptomatology to Regional Enteritis can be quite similar.

Case 2: L. S., born 1895, female, had an attack of polyarthritis in 1959. A few months thereafter, she complained of ischiatic pain which was interpreted to be a discus hernia (L/4, L/5).

In August 1960, the patient complained of uncharacteristic, noncolicky abdominal pain which increased upon defecation. An upper G-I series was ordered and, shortly before the tests were made, she vomited repea-

tedly. Since the patient was a known psychoneurotic, and was being treated with Taractan, it was supposed that the emesis could be related to her fear of the ensuing examination. However, the patient became febrile, the pain in her left lower abdomen increased, and she noticed that her abdomen began to swell. Upon admission, she presented with signs of an adynamic ileus and her white blood cell count was 22,000. A tentative diagnosis of diverticulitis abscess was given and a neoplasm of the large bowel was to be ruled out.

Five days after hospitalization, an exploratory laparotomy was performed and the gross pathology showed a total necrosis of the descending colon down to the flexura recto-sigmoidea. Microscopy of the resected 80 cm. piece of large bowel revealed a heavily infarcted, hemorrhagic bowel involving all intestinal layers. The mucosa was necrotic and separated from the submucosa whereas the subserosa and muscularis propria were somewhat less damaged. The vessels of the mesocolon were thrombotic. A diagnosis of periarteritis nodosa was made.

Post-operatively, the patient developed monarthrititis which later advanced to polyarthrititis. Furthermore, she complained of diplopia, and eye-muscle paresis was ascertained. Erythema nodosum was noted as well. In May, 1961, a peroneus paralysis became manifest. The patient was treated with corticosteroids for over a year and an improvement in her condition to the point of cure has been shown up to the present day.

Discussion: Statistical surveys (Hegglin) show that periarteritis nodosa is correctly diagnosed very seldomly — probably not more than in twenty per cent of the cases. Hypertension, due to renal involvement, is the presenting symptom in about half the cases of periarteritis nodosa. Abdominal cramps move to the foreground when abdominal vessels are hit. Fever, leucocytosis, and eosinophilia are common findings. The picture of polyneuritic complaints is seen often as well. A history of allergy such as urticaria, asthma bronchiale, and sensitivity to medication is reported frequently.

Although the patient was stricken with a form of «acute Regional colitis», the disease, as described by Crohn, falls into quite another category. The pathology differs widely.

Case 3: A. G., born 1912, male, suffered from intermittent claudication but was in good health otherwise until 1961 when he suddenly felt severe, colicky cramps in his abdomen. His stools were normal. A paralytic ileus was found on physical examination and the patient was hospitalized. Decompression with a Miller-Abbott tube was initiated. Three days after

admission, the patient had severe diarrhea and culture revealed *Staph. albus*. Eight days after admission, his physical condition deteriorated. His abdomen ballooned, he vomited frequently, he became exsiccotic, and he developed an ileus which was now one of acute organic obstruction. Because the ileus persisted, the patient was operated upon and a stenosis was found in the terminal ileum. The granulomatous tissue was removed and diagnosed by pathology to be a foreign-body granuloma due to the ingestion of Barium (of a previous G-I series) with subsequent Barium-phagocytosis.

Discussion: The presence of the foreign-body granuloma had provoked a reactive inflammation of the distal ileum together with heavy mucosal ulceration of that area — a picture not unlike Regional Enteritis.

Case 4: M. B., born 1907, female, had a twelve year history of gastrointestinal disorder. In 1947, she was treated for acute pancreatitis. Two years later, following a hysterectomy, she developed severe gastric bleeding and was laparotomized because of an ulcer. In the same year, both knees and the small joints of her hands began to swell, became tender, stiff and generally arthritic. She again experienced gastric distress in 1950 and, because intestinal obstruction was suspected, she was operated upon and an anastomosis between the proximal jejunum and the ileum was performed. The reason for this procedure was not reported.

The patient had enjoyed reasonably good health until Sept. 1959 when she suddenly felt a crampy, colicky pain in her lower abdomen. Signs of adynamic ileus were present on examination, the hemoglobin was 55 per cent, amylase was normal, x-rays (empty, standing) showed fluid levels in both small and large bowels and the leucocytic count read 27,000 shortly after admittance.

One day after hospitalization, the severity of the pain increased, the patient became shocky, and the abdomen began to bulge. Immediate laparotomy was performed. Gross pathology revealed a gravely infarcted, hemorrhagic loop of the proximal jejunum. It was resected. The pathology showed mucosal necrosis in contrast to the other intestinal layers which were well preserved. The line of demarcation was observed in the sub-mucosa. No vessel thrombosis and no circulatory disorder resulting from strangulation or infarction of the mesenteric vessels could be found. Similarly, no granulomatous tissue could be seen. An eosinophilic inflammation with large numbers of eosinophils infiltrating all layers of the intestinal wall predominated. It was decided that this acute form of mucosal-necrotizing regional jejunitis was to be referred back to past gold

injections that the patient had received for her arthritic condition. Kaijser (1937) cited an analogous case after arsphenamine injections.

Case 5: J. R., born 1913, male. Pertinent to this patient's history is to say he underwent an operation in 1963 (Billroth II) for duodenal obstruction caused by a duodenal ulcer. He was readmitted later the same year because of severe diarrhea and loss of weight. Sprue was suspected. However, x-ray examination showed findings compatible with Regional Enteritis. It was decided to explore once more, and this time the pathology reported a non-specific inflammatory process within the mucosa and deeply-seated ulceration at the junction of the gastro-jejunal anastomosis. The connective tissue was increased and hypertrophic, the submucosa was infiltrated with leucocytes, plasma cells, giant cells and histiocytes.

Discussion: Leuthold, Ammann, Pfenninger and Haemmerli have reached the following conclusions after examining the small bowel by biopsy some time after stomach resection: 1) The majority of patients who have had gastric resection show morphological changes in the jejunal mucosa. 2) In six of their thirty-one cases reviewed, mucosal changes strongly resembling idiopathic sprue were noted microscopically. 3) Only biopsy specimens taken near the point of anastomosis gave evidence of mucosal changes. 4) No correlation could be made between clinical symptoms and pathological findings. The authors feel that light to moderate morphological changes within the mucosa of the proximal jejunum following stomach resection are findings which are to be regularly expected (7). These changes were held to be inconsequential in the pathogenesis of the post-gastrectomy sprue syndrom.

Although history, x-ray findings, and general impression of the surgeon tended strongly to label the diagnosis Acute Regional Enteritis in this case, the pathologist was less committal and gave, as his diagnosis, Enteritis following stomach resection.

Case 6: E. S., born 1915, female. The patient had a history of ankylosing spondylitis since 1960. In 1961, she noticed blood and mucous in her stools. A consequent barium enema uncovered a polyp in the descending colon. In February 1962, some six kg. lighter in weight, she experienced severe pain in the epigastrium but this time her stools were normal. On examination, an orange-sized resistance was palpated in the left lower quadrant. Rectal examination was negative.

Five days after admission, the patient was operated upon and 23 cm. of large bowel was resected and the tumor removed. A hemicolectomie was performed.

The histology showed a heavily inflamed mucosa, hypertrophic muscularis propria, and ulceration of the mucosa in several places. Many mucosal diverticula were seen jutting into the serosa. The submucosa and subserosa and serosa were widely infiltrated with lymphocytes, monocytes, plasma cells, histiocytes and small lymph follicles.

Discussion: The final diagnosis said "Diverticulitis Tumor" although the pathology was by no means easy to interpret or straightforward. In fact, the patient suffered massive, bloody diarrhea post-operatively which led to the suspicion of either Regional Enteritis or Ulcerative Colitis. A transrectal-laparotomy showed an inflamed cecum and terminal ileum. A radical ileo-cecal resection was undertaken and the histology confirmed a diagnosis of Ulcerative Colitis. The picture of Ulcerative Colitis begins with pinpoint hemorrhagic mucosal foci which, in time, become minute abscesses within the crypts of the mucosal glands. As these abscesses increase in size, superficial sloughing occurs and small ulcers are produced. These defects usually penetrate only to the muscularis, but in time, deep excavations to the point of penetration of the bowel may occur. Later, these ulcers may coalesce to form large irregular defects. Residual islands of intact mucosa which persist are called pseudopolyps. Ulcerative Colitis is a disorder of uncertain etiology, although a psychic constitution involving strong egocentricity coupled with unsatisfied love-requirement is found quite commonly in patients with better than average intelligence.

The terminal ileum is involved as often as 16 per cent (Cattell) in cases of chronic Ulcerative Colitis. In these cases, Regional Enteritis is commonly presented as a missed diagnosis.

Intermittent fever, moderate to heavy diarrhea often containing mucus, blood, and pus, and hypochromic anemia are common symptoms.

Case 7: M. G., born 1933, male. Present history began in 1963 when the patient was involved in an accident while unloading a truck. The left side of his thorax and upper abdomen were wedged between a wall and the truck causing immediate pain. The patient saw his physician ten days later because of pain under his left costal border when coughing and because of persistent pain in the left side of his upper abdomen. Signs of a thoracic rib contusion were still evident at this time. The patient spoke of having had this colicky pain in his abdomen for at least two weeks which placed his illness actually a few days before his accident. The pain arose especially during a mealtime and was accompanied by nausea and vomiting. During these two weeks, the patient had also noted a retrosternal burning sensation and the presence of considerable gas in

his intestines. His stools were normal although he was more constipated than normal. Examination on admittance in June 1963 showed the patient to be afebrile but with a white cell count of 19,400 which soon rose to 22,000 leucocytes. There was an eosinophilia of up to 22 per cent. His abdomen was soft though diffusely tender to deep palpation. A standing-upright roentgen revealed fluid levels in the left upper quadrant. Signs of a sub-ileus were present.

The patient's condition deteriorated rapidly soon after admission and a laparotomy was warranted. Although no signs of peritonitis were to be seen on gross pathological inspection, an enteritis involving the entire small bowel with severe mesenterial lymphadenitis was discovered. No resection was done. Postoperatively, the patient responded well to corticosteroids.

Discussion: Ureles (1961) describes two patients with massive infiltration of the stomach with thickening of the pylorus. Both patients had eosinophilia in a peripheral blood smear. One normally finds the eosinophil within gastro-intestinal tissue. However, it is found there with increasing concentration in Hodgkins disease, gastro-intestinal carcinoma, amebiasis, helminthic disease, and gastric ulcers. An explanation of how it happens that a homogenous eosinophil distribution can over-run a tissue as was the case in the small bowel of the above mentioned patient is not clearly known. Blood and tissue eosinophils often accompany antigen-antibody reactions. Perhaps, in an instance where the bowel becomes the "shock tissue" of an organism, the eosinophils act as vehicles for the transportation of antigen to that site.

Tissue eosinophilia may be seen in a) a hypersensitivity reaction mostly together with an abundance of plasma cells whose function it is to elaborate antibodies b) in an Eosinophilic granuloma which is quite possibly an allergic disorder. The G-I tract may develop a gastric lesion similar to the pulmonary type — Loeffler's Syndrome; (c in vasculitis; and in d) disseminated eosinophilic collagenosis. In this disease, the antrum and pylorus are most frequently involved and are swarmed through and through with eosinophils. A circumscribed form of this disease shows no peripheral eosinophilia. A history of allergy, generally asthma bronchiale, is often present, although there is no correlation between the severity of the disease and a history of asthma.

Symptomatology such as diarrhea, abdominal discomfort and pain, bloody stools, anemia, weakness and weight loss with ulceration of an eosinophilic infiltration and subsequent granuloma formation or signs of constipation, crampy pains, nausea and vomiting with the obstruction pattern of the disease can imitate Regional Enteritis extremely closely.

Case 8: B. G., born 1890, male. The patient was operated upon in 1962 to remove strictures and adhesions strangulating the proximal small bowel. At the time of operation, a perforation was found and sutured. The patient recovered reasonably well from a suppurative peritonitis.

One year later, the patient was rehospitalized. He had noticed tarry stools periodically, but x-ray examination was negative, and the source of the bleeding remained unclear. Two days prior to admission, the patient suddenly felt intense pain in his left lower abdomen. He was severely constipated and vomited after meals. A G-I series showed a blockage in the proximal jejunum. The "tumor" was extirpated and the histology showed mucosal necrosis, heavy leucocytic infiltration of the submucosa which reached through into the musculature and subserosa, and a granulation tissue of unspecific nature. Lymphocytes, histiocytes, and plasma cells predominated the picture but no tumor cells were found. The diseased tissue approximated the size of a half-dollar piece.

The pathologist added that the case was similar in many aspects to Regional Enteritis but that the usual proliferation of connective tissue was absent. Otherwise, the histological picture was almost identical to Regional Enteritis. He found the inflammation in this case to be more of the ulcerating type (early stage) than of the proliferative type more commonly associated with Regional Enteritis. One month later, the patient's stools were pitch and tarry once more and a laparotomy was ordered. A tumor the size of a small egg was found in the proximal jejunum.

Pathology revealed a very serious inflammation and ulceration within the 10 cm. long extirpated piece of jejunum. The mucosa, submucosa, musculature, and subserosa were heavily infiltrated with leucocytes. It was confirmed that the bleeding had arisen from the ulcerated parts of mucosa. This time, however, many atypical cells were discovered and classified as reticular giant cells. Final diagnosis read retothelial sarcoma (reticulum cell sarcoma).

Discussion: What was suspected for months of being an Acute Regional Enteritis, judging from symptomatology but unconfirmed by pathology, turned out to be tumor. A re-evaluation of the histology showed that tumor cells had been present earlier.

Tumor (Lymphosarcoma) is mentioned by Markowitz as one member in a group of lesser known and common causes of perforation of the small bowel. Tumor generally manifests perforation first with acute peritoneal irritation. Site of the perforation is evenly divided between ileum and jejunum, although less than 50 such perforations have been reported in the world literature.

Small bowel perforation, as reported by Markowitz, in Regional Enteritis is a reported fact but is regarded as extremely rare. The granulomatous low grade type of inflammation with its heavy fibroblastic reaction precluded the occurrence of a free open perforation into the peritoneal cavity in Regional Enteritis according to Crohn. Worth noting is that Regional Enteritis seldom causes symptoms of a diffuse peritonitis. Its signs of peritoneal irritation remain more localized generally.

Ulcerative Colitis is also a cause of small bowel perforation, although this happens with far greater frequency in the diseased colon.

Case 9: E. R., born 1913, male. The patient was always in good health. In January 1961, he felt light «stomach cramps» which soon got better and later disappeared entirely by eating a bland diet. In June 1961, the cramps returned and with them nausea and a lack of appetite. The patient felt pain in his epigastrium but could not localize it. Then the pain shifted to the lower abdomen and finally settled about his umbilicus. He experienced extreme flatulence, and yet the pain did not lessen when air was let. Two days prior to admission, signs of peritonitis were established and heavy bouts of emesis ensued. Admitting examination revealed a bloated and diffusely tender abdomen. The patient was afebrile, there was no leucocytosis, rectal findings were negative, amylase was not elevated, the blood work-up was found to be within normal limits, and the urine sediment showed granulated and hyaline casts. The patient was severely dehydrated and signs of an obstructive type ileus were present. An exploratory was performed.

Macroscopically, the signs of Regional Enteritis were present. Infected loops of ileum closely adherent in the form of a «bowel package» were seen. The ileum was edematous, colored reddish-blue. Peristalsis was barely discernible. 23 cm. of distal ileum were resected.

Yet, the pathologist's report could not substantiate the gross macroscopic findings. The mucosa was well preserved and no ulceration was to be seen. The greatest changes were found in the muscularis propria and subserosa which were very heavily infiltrated with inflammatory cells and were starkly edematous. The infection appeared to arise in form of an abscess from the outer layers of the intestinal wall. The vessels were hyperemic, fresh bleeding points and areas of suppuration were located in the outer intestinal layers. Diagnosis: abscess formation within the subserosa and muscularis propria of the terminal ileum.

Case 10: A. K., born 1911, female. This patient was admitted to the Bürgerspital in May 1959 for the purpose of being dialysed. She was drowsy

on admittance suffering from anuria and hyperchloremic acidosis. While under treatment for uremia, the patient suffered massive gastro-intestinal bleeding stemming from the large bowel. Furthermore, she developed thrombocytopenia, showed a high shift to the left in her leucocytic count went into collapse and died two months after admittance.

Her history, as received from another hospital, noted that she had developed about twenty peritonsillar abscesses in her lifetime. In April 1959, she developed Purpura Rheumatica of the Schönlein-Hennoch type together with allergic joint pain about two weeks following a tonsillectomy and tooth extraction. Eleven days after onset of the Purpura Rheumatica, the patient experienced signs of an acute abdomen whereupon she was immediately operated upon. The exploratory revealed a serious «ulcerating-necrotizing» ileitis of the terminal ileum, perforation of the terminal ileum, and an appendicitis gangrenosa. About 30 cm. of the terminal ileum were resected and an ileotransverotomy was performed.

The histology showed ulceration, necrosis, and a large invasion of eosinophils within the mucosa as well as in the underlying layers. The entire intestinal wall was swollen, edematous and showed spotty conglomerations of leucocytes. Streptococci were indentified. Postoperatively, the patient bled heavily into the intestinal tract, but proctoscopy ruled out that the hemorrhaging arose from the site of the operation. Largactil and chloromycetin were discontinued in hopes of advancing erythropoiesis but the patient died fourteen days after the operation.

Autopsy showed large kidneys with fresh subcapsular bleeding, a thrombosis of the left renal vein and bleeding into the knee joints. Histology reported that a Schönlein-Hennoch was possible but was not able to substantiate the diagnosis.

Discussion: Schönlein-Hennoch allergic purpura is also to be included in a differential diagnosis of Regional Enteritis. It is a non-thrombocytopenic form of purpura, which when associated with joint pain is referred to as the Schönlein form. The Hennoch form of Schönlein-Hennoch purpura is associated with abdominal pain. Some of the main symptoms include fever, general malaise, erythema nodosum, urticaria and edema. Kidney lesions are often present. This symptom complex is found more commonly in children. The pathogenesis involves an antigen-antibody reaction within the endothelium of blood vessels. An urticaria of the intestinal wall has been held responsible for colicky abdominal pain.

Streptococcal infections, medications and certain food-stuffs have been most frequently implicated as the causative factors responsible for Schönlein-Hennoch allergic purpura.

IV. CONCLUSION

The ten cases discussed included two cases of periarteritis nodosa, a barium granuloma, a gold-injection intoxication which manifested as an enteritis, an enteritis following gastrectomy, ulcerative colitis, infiltrating eosinophilic enteritis, retothelial sarcoma, an abdominal abscess formation, and a Schönlein-Henoch purpura. The etiology, the pathogenesis, the histology, course and prognosis of these separate illnesses differ greatly, and yet there exist several bonds which tie them closely together as well. Most of the cases discussed began acutely. All had the symptom — abdominal pain — as the underlying chief complaint. The pain was generally diffuse and non-specific. All the illnesses demonstrated a form of enteritis of one kind or another in the pathological section. And all cases mentioned, encompassed a host of symptoms which, if one wishes, may be sought out and attributed to Regional Enteritis.

Though often suspected, none of the cases demonstrating a markedly acute course turned out to be a Regional Enteritis. Wherever an acute Regional Enteritis was strongly suspected from the clinical picture, the pathological report gave contradictory evidence. If, in a future time, the etiology of Regional Enteritis is proven to be one of an allergic nature, possibly similar to Arthus or Schwartzman reaction, then the pathogenesis of the disease must be one of chronicity. Although not yet proven by experiment, it appears now that Regional Enteritis is a long-standing condition and not a disease whose course originates acutely.

FOOTNOTES

1. Van Patter, et al.,: «Regional Enteritis.» *Gastroenterology*. 26, 350, 1954.
2. Crohn, B., Yarnis, H.,: «Regional Ileitis.» Grune & Stratton. New York, 1958, p. 150.
3. *ibid.* pg. 345.
4. *ibid.* pg. 346.
5. Van Patter, et al.,: «Regional Enteritis.» *Gastroenterology*. 26, 372, 1954.
6. *ibid.* pg. 385.
7. Leuthold, E., et al.,: «Biopische Befunde am Dünndarm nach Magenresektion.» *Bibl. Gastroent.* 6, 220, 1964.

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